


## 1    **ABSTRACT**

2            A method for determining the location of the accumulation fluids in a subterranean  
3    formation. The method includes the steps of determining a first velocity vector " $V_x$ " for  
4    migration of fluid in a region of interest in the subterranean formation. The first velocity vector  
5    includes attributes of speed and direction of flow of fluid in a first direction in the region of  
6    interest. The method further includes determining a second velocity vector " $V_y$ " for migration of  
7    fluid in the region of interest. The second velocity vector includes attributes of speed and  
8    direction of flow of fluid in a second direction in the region of interest. The velocity vectors are  
9    then extrapolated to identify the fluid accumulation location. The first and second velocity  
10    vectors are primarily functions of supplementary pressure " $dP$ " in the region of interest, the  
11    permeability " $c$ " of the region of interest, and the viscosity " $u$ " of the fluid in the region of  
12    interest.

13             The supplementary pressure can be determined by identifying pressure gradients within the  
14    region, the region being characterized by a seismic image of a stacked time section representing  
15    horizons within the region. The permeability of the media within the region, and the viscosity of  
16    the fluid within the region, can either be determined mathematically or from geological data.